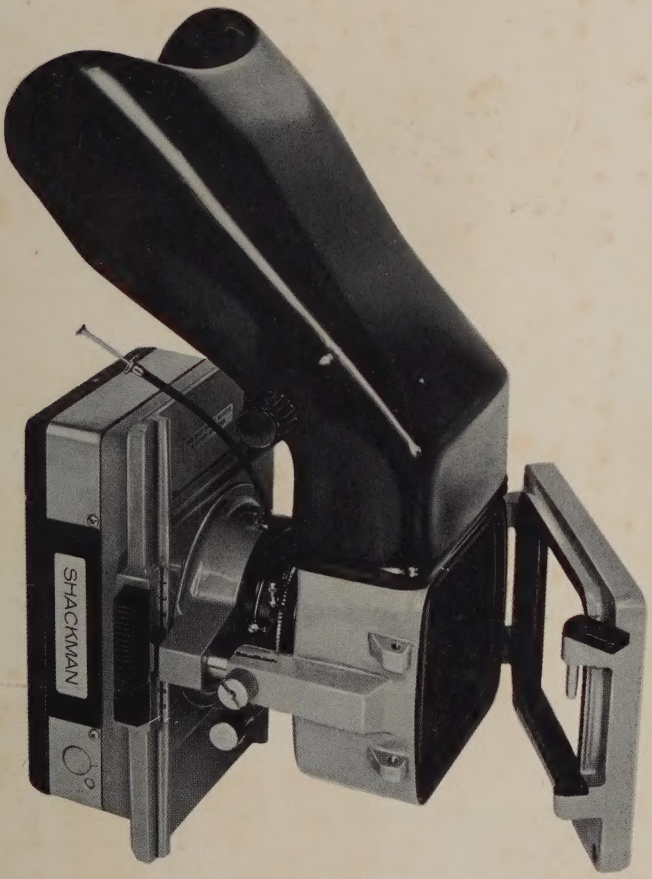
SHACKMAN



SUPER SEVEN SYSTEM

OSCILLOSCOPE CAMERAS

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INTRODUCTION

The Shackman SUPER SEVEN SYSTEM oscilloscope cameras have been designed for use with most types of cathode ray oscilloscopes to enable a permanent film record to be made of c.r.o. traces.

The camera system comprises an oscilloscope bezel adaptor Type A or AS, a camera body Type B20 or B30 complete with binocular viewer (B21 or B31 without the binocular viewer), and a film module Type M with focussing screen.

The bezel adaptor Type A or AS is specially designed to replace (or fit on to) the bezel of the c.r.o. and enable the camera to be quickly attached to the c.r.o. In addition, this adaptor allows the camera to be hinge-swung away from the c.r.o.—to the left or to the right—and thus permit direct viewing of the trace.

The camera body is a compact aluminium alloy casting with a built-in multi-ratio lens (B20 or B21) fixed ratio lens (B30 or B31) and self-cocking shutter assembly. All controls are accessible from the normal operating position of the camera, and the focussing arrangement includes a calibrated scale which enables the camera to be very quickly focussed when subsequently re-attached to a given oscilloscope. The camera back on B20 & B21 includes a fully rotatable 9-position slide plate for the Type M film modules.

Any one of four interchangeable, par focal, multi-position film modules Type M can be easily mounted on to the 9-position slide on the camera back. On B20 & B21 rotation of the slide enables the film module to be used in the vertical or horizontal modes. (B30 & B31 fixed vertical) The film modules are: Type M2 (Polaroid* pack), Type M3 (Polaroid roll), and Type M4 (International) which accepts film holders Type C using Polaroid 4 x 5 holder, conventional 4 x 5 film, or plate holders. Type M5 Polaroid* pack (square format) The multi-position facility enables multi-trace recordings to be made on one print, thus affording ready comparison of traces and also a saving in film.

*Polaroid is a registered trade mark of the Polaroid Corporation Cambridge, Mass. U.S.A.

SPECIFICATION

Adaptor: Type A or AS, interchangeable, left and right hinge.

Lens: 51 mm fl. 9.

Object/image ratio: infinitely variable from 1:0·7 to 1:1. (B20 & B21)

Object/image ratio: fixed 1:0·7 (B30 & 31)

Aperture: fl. 9 to f22 or fl. 9 to f11 depending on model.

Shutter: Rim set, 1 sec—1/125 sec, 'B' and time facility actuated by cable release.

Focus: manual telescopic action with calibrated scale.

Viewer (camera body Type B20 & B30); binocular, off-axis, low angle.

Film modules: Type M2, Type M3, Type M4, or M5. All interchangeable on 9-position slide on camera back for multi-trace recording (when module is orientated in vertical mode B20 & B21 only)

Length: 241·30 mm (9·5 in.) including bezel adaptor and film module.

Weight: approximately 3·39 kg (7·5 lb) with film module Type M2.

Accessories: cable release; focussing screen.

NOTE The above specification applies also to the Shackman SUPER SEVEN with camera body Type B21 & B31 except that there is no binocular viewer.

Film module and film used: Type M2 uses Polaroid 107 pack film 3000 ASA, eight exposures per pack.

Type M3 uses Polaroid 42 roll, 200 ASA; 47 roll, 3000 ASA; 410, 10,000 ASA or 46L positive transparency 800 ASA. All eight exposures per roll.

Type M4 with C1 uses Polaroid 4 x 5 materials viz: 52,400 ASA; 57,3000 ASA; 55P/N, 50 ASA. All 4 x 5 Polaroid materials supplied in boxes of 20 single sheets.

Type M5 uses Polaroid Type. 87 pack film 3000 ASA. Eight exposures.

Shackman Instruments Limited reserve the right to alter specifications without notice.

INSTALLATION

Fitting the Type A or AS adaptor

(a) Remove screws securing bezel to oscilloscope.

(b) Remove filter (if fitted) and secure for future use.

(c) Fit Type A or AS adaptor (10) to oscilloscope and secure with the screws removed in operation (a).

NOTE AS adaptors suffix * or ** must be used with appropriate supplementary lens S50 or S52 to obtain focus and Screen coverage. See additional note page 5.

Mounting the camera

(a) Offer the camera body (12) to adaptor (10) and locate long hinge-pin (9) in either left- or right-hand side of adaptor, depending on which side of the oscilloscope the camera is required to be hinged.

NOTE The short locking-pin (11) should not be inserted until the focussing procedure.

(b) Insert the cable release into cable-release socket (13) and screw home.

Mounting the film module Type M

(a) Fully slacken the small module-retaining screw (18) on left-hand side of the film module (1).

(b) Depress the rocker catch (19) on the film module (1) and slide the film module on to the camera back (3).

(c) Position the film module so that the indicator arrow (4) is aligned with number '5' on the 9-position scale (2). The rocker catch (19) will detent when released.

(d) Tighten the small module-retaining screw (18).

SELECTING OBJECT-TO-IMAGE RATIO B20 & B21 only

The Shackman SUPER SEVEN is fitted with an infinitely variable object-to-image ratio. This facility, together with that of being able to have the film module orientated in either the vertical or horizontal mode (and along the 9-position scale in the vertical mode), provides for greater accuracy of the recording and for film economy. A ratio should therefore be selected to suit the particular application (see Fig. 1).

For ease of selection, three calibrated positions are marked on the barrel of the camera: X1·0 (1:1 for accurate analysis work); X·85 (1:0·85 for ensuring complete coverage of 8 x 10 cm displays); X·7 (1:0·7 for economy shots with more than one picture per print when the film module is in the vertical position).

To set the desired object-to-image ratio:

(a) Rotate the film module (1) so that it is in the horizontal mode.

(b) Slacken the object-to-image ratio clamp screw (16).

(c) Hold both sides of the camera body as indicated in Fig. 2 and slide the barrel (17) in or out of the camera back (3) so as to register the black line on the calibrated ratio scale (6) with the vertical face of the metal indicator (5).

(d) Lock the object-to-image ratio clamp screw.

NOTE The focussing procedure must be carried out after any adjustment to the object-to-image ratio.

NOTE B30 & B31 are fixed ratio 1:0·7 and module plate is fixed in vertical mode.

FOCUSSING

(a) Set lens aperture (15) to maximum.

(b) Set shutter (8) to position 'T' or time facility depending on model.

(c) Open back of film module (1).

(d) Insert focussing screen if not already in (this locates in the same way as the film).

(e) Open the shutter by depressing the cable release or lever depending on model.

(f) With the camera swung away from the oscilloscope, adjust brilliance of the trace to a level that will facilitate focussing.

(g) Swing the camera into position and lock with short locking pin (11).

(h) Using a coin, slacken off focussing screw clamp (14).

(i) Focus by sliding in or out the telescopic rods (7) until the trace appears sharp on the focussing screen.

(j) When satisfactorily focussed, tighten the focussing screw clamp (14) and note the reading on the engraved telescopic rod (7). (Note of this reading will obviate the focussing procedure when the camera is again used on the same oscilloscope.)

(k) Close the shutter by depressing the cable release or lever depending on model.

(l) Remove the focussing screen. (Not applicable if film module Type M4 is used.)

TRIAL EXPOSURE

(a) Ensure that film module is in the vertical mode. (B20 & B21)

(b) With the camera swung away from the oscilloscope, adjust trace brilliance to the same level as the graticule.

(c) Swing the camera into position and lock with short hinge-pin.

(d) Load the film into the film module (see Polaroid leaflet inside back pocket).

(e) Set shutter (8) to 1/30 sec.

(f) Bearing in mind the vertical dimensions of the graticule, the object-to-image ratio selected, the trace in question and the film size, slide the film module (1) to a determined position on the 9-position scale (2). The object of this procedure is to make three trial exposures on the same film, using different settings of trace brilliance and shutter speed in order to discover optimum settings.

(g) Ensure that the viewing flap is closed (camera body Type B20 & B30 only). This flap is controlled by a knob situated on the right-hand side of the binocular viewer.

(h) Make three exposures following the procedure in operation (f), noting the settings for each exposure and repositioning the film module along the slide between each exposure.

(i) Process the film (see Polaroid leaflet inside back pocket).

(j) Judge the results against settings noted in operation (h). Print faults are explained in the Polaroid leaflet inside the back pocket.

SUPPLEMENTARY LENSES

When using S50 or S52 Supplementary lenses in conjunction with appropriate AS adaptors suffix * or **. The following should be noted.

(a) Having fitted the supplementary lens to the front of the main lens the object to image ratio on B20 & B21 cameras must be set to 1:0·7.

(b) Viewing facilities on B20 & B30 bodies will be restricted due to either:

i) The increased distance from C.R.T. to camera interface,
ii) or longer adaptor to accommodate a larger screen size.

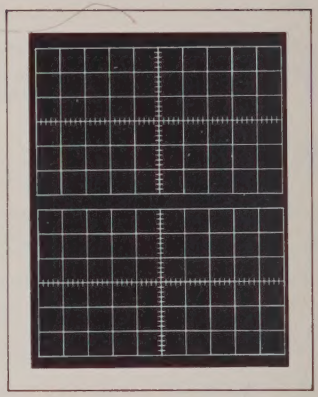
MAINTENANCE

The Shackman SUPER SEVEN requires no maintenance. However, the two steel rollers in the film module Type M2, Type M3 and Type M5 must be kept clean.

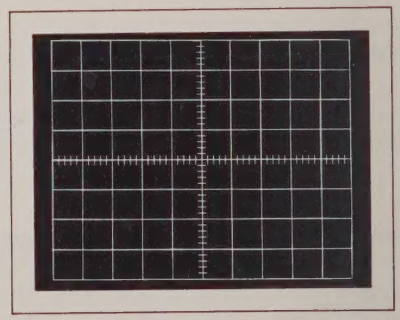
Cameras for servicing or repair should be marked 'for the attention of the Service Department' and returned to:

SHACKMAN INSTRUMENTS LTD.,
Mineral Lane,
Chesham,
Bucks, HP5 1NU
ENGLAND

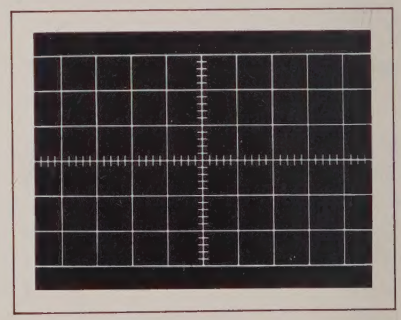
10 x 6 cm graticule at 1:0·7 ratio (with film module in vertical mode in slide positions 2 and 8) All camera bodies.



10 x 8 cm graticule at 1:0·85 ratio (with film module in horizontal mode) B20 & B21 only.



10 x 6 cm graticule at 1:1 ratio (with film module in horizontal mode) B20 & B21 only.



The examples shown in this figure are based on the Polaroid film having a nominal size of 8·3 x 10·8 cm (3¼ x 4¼) as used in film modules Type M2 and M3.

FIG. 1 SELECTING OBJECT-TO-IMAGE RATIO (B20 & B21 only)

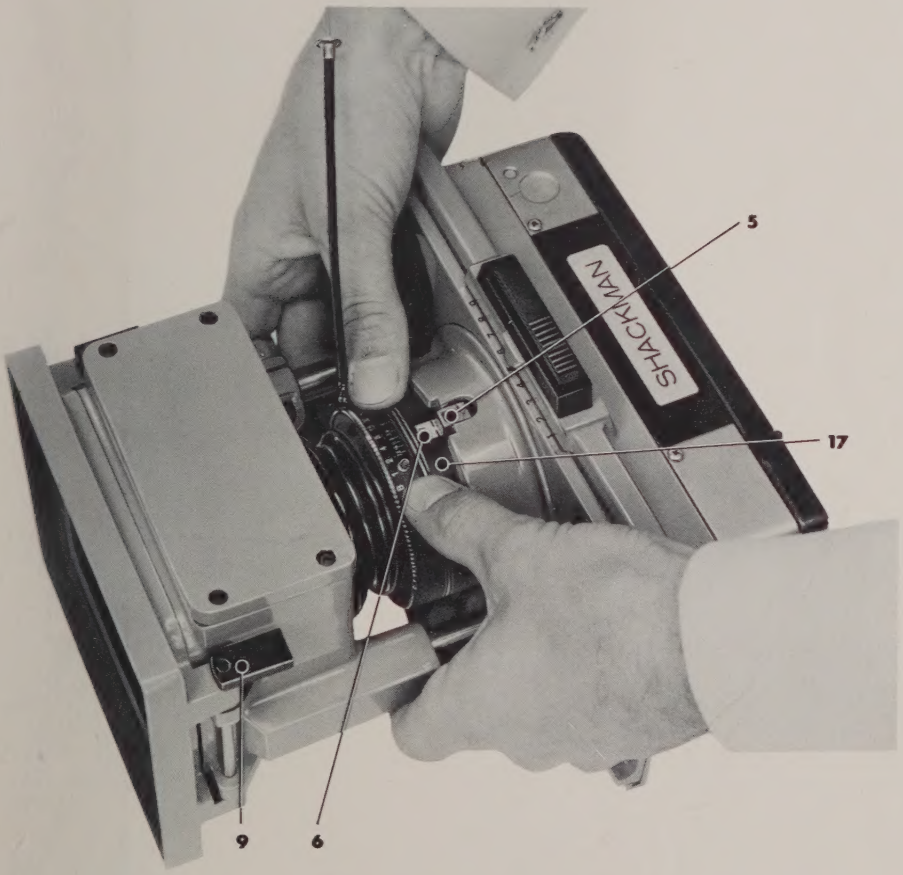
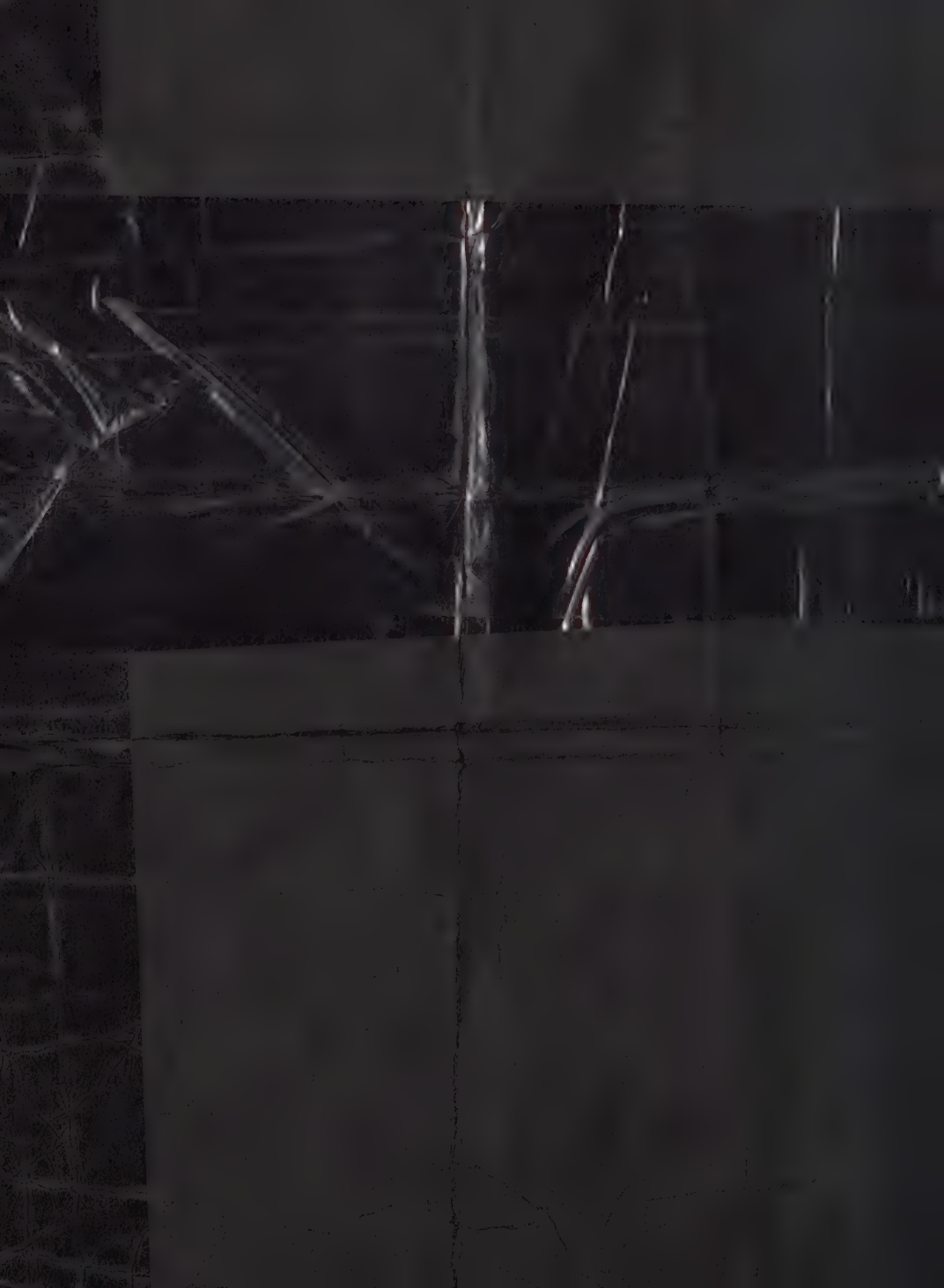


FIG. 2 SETTING OBJECT-TO-IMAGE RATIO (B20 & B21 only)

KEY

1. Film module
2. 9-position scale
3. Camera back
4. Indicator arrow
5. Metal indicator (B20 & B21 only)
6. Ratio scale (B20 & B21 only)
7. Telescopic rods
8. Shutter
9. Long hinge-pin
10. Type A or AS adaptor
11. Short locking-pin
12. Camera body (Type B21)
13. Cable release socket
14. Focussing screw clamp
15. Lens aperature
16. Ratio clamp screw (B20 & B21 only)
17. Barrel (B20 & B21 only)
18. Module retaining screw
19. Rocker catch

NOTE: B30 & B31 have module plate fixed in vertical mode only.



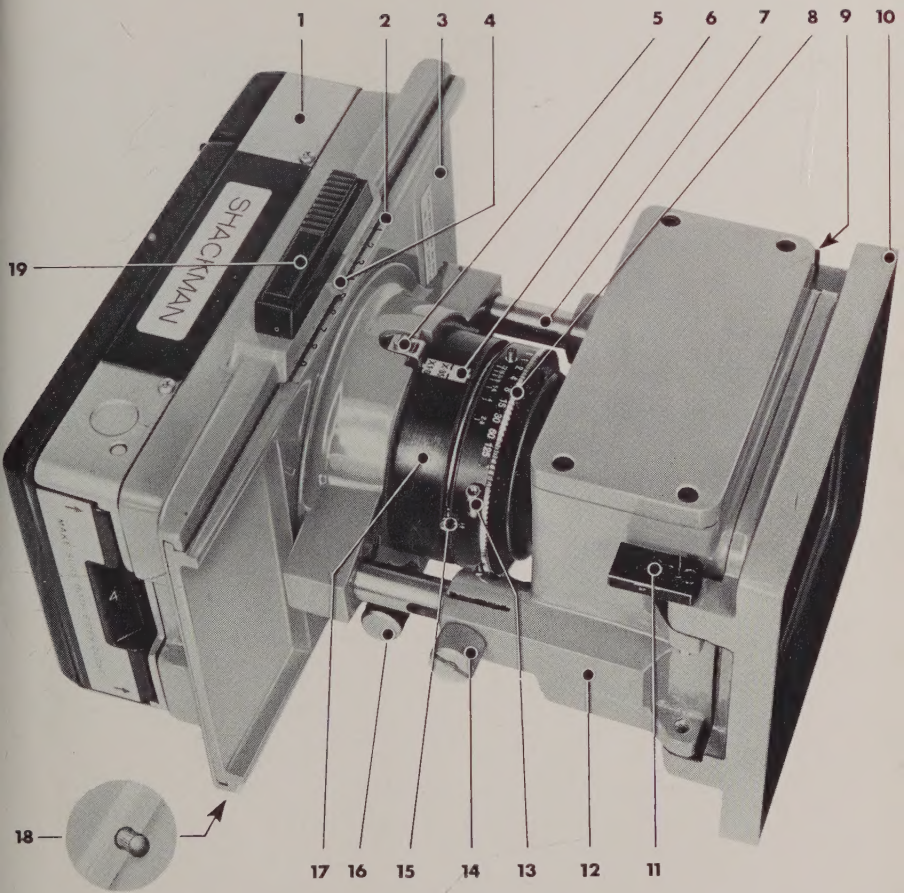


FIG. 3 SUPER SEVEN

(WITH FILM MODULE M2 and CAMERA BODY TYPE B21)

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